

FOOD SAFETY GUIDELINES FOR THE PREPARATION OF SUSHI

Under *The Public Health Act* regulations, food handling establishment operators must obtain a permit to operate an establishment that handles and prepares sushi.

For the purposes of this guideline, “**Sushi**” is defined as ready-to-eat cooked rice that has been acidified with a vinegar solution and formed with a variety of ingredients including raw or cooked seafood, fresh chopped vegetables, cooked egg, etc.

This is a guideline only. Additional items may be required by the Public Health Inspector pursuant to the Food and Food Handling Establishments Regulation (*The Public Health Act*).

Introduction

Ready-to-eat sushi is considered a potentially hazardous food and must therefore be handled with care to prevent foodborne illness. The health risks associated with sushi arise from the raw seafood products used in preparation and the acidified sushi rice. Raw seafood may contain the infective form of parasites such as *Anisakinae* and *Diphyllobothrium*. Sushi rice is traditionally held at room temperature which may support the growth of pathogenic bacteria if not uniformly and adequately acidified. Food operators must ensure that sushi is kept at 5°C (41°F) or below during transport, storage, and display.

Definitions

Acidified Rice- Cooked rice with vinegar added to achieve a pH of 4.6 or less

Approved Source- A source that has been determined to conform to principles, practices, and standards that protect public health.

Cross-contamination- Means the transfer of harmful substances or disease-causing microorganisms to food by hands, food-contact surfaces, sponges, cloth towels and utensils that touch raw food, are not cleaned, and then touch ready-to-eat foods. Cross-contamination can also occur when raw food touches or drips onto cooked or ready-to-eat foods.

Hangiri- A round, flat-bottom wooden tub or barrel used in the final steps of preparing rice for sushi.

Potentially hazardous food- Any food that consists in whole or in part of milk or milk products, eggs, meat, poultry, fish, shellfish, edible crustacea, or other ingredients, including synthetic ingredients, in a form capable of supporting rapid and progressive growth of infectious or toxigenic microorganisms, but does not include foods which have a pH level of 4.6 or below or a water activity value of 0.85 or less.

Shamoji- Japanese term for the spatula or spoon used to turn and spread the sushi rice.

Sashimi- Thin slices or slabs of raw fish that are presented ready-to-eat.

Sushi- Ready-to-eat cooked rice that has been acidified with a vinegar solution and formed with a variety of ingredients including raw or cooked seafood, fresh chopped vegetables, cooked egg, etc. Product forms can include:

- nigiri – small balls of rice with ingredients on top,
- maki rolls – layers of rice and nori sheets rolled with a bamboo mat to form cylinders that contain various fillings, and

- hand rolls – cone shaped rolls formed by a sheet of nori filled with various ingredients.

Sushi-grade- Freezing and storing seafood at -20°C (-4°F) or below for 7 days (total time), or freezing at -35°C (-31°F) or below until solid and storing at -35°C (-31°F) or below for 15 hours, or freezing at -35°C (-31°F) or below until solid and storing at -20°C (-4°F) or below for 24 hours.

Sushi Rice- Cooked short grain rice mixed with vinegar and other ingredients such as sugar and/or salt.

Surimi- A type of gelled fish paste that can be used to make simulated seafood products such as fabricated crab meat that can be used in sushi.

Tamago- Is the Japanese omelet commonly used in maki, nigiri and Temaki sushi. Unlike a regular omelet, the tamago is made with sugar, soy sauce, and mirin.

Receiving and storing foods

A. Supplier and food information

- It is imperative to obtain seafood products only from approved, reputable sources. Upon purchasing frozen seafood products, request written documentation from the supplier to ensure the product meets parasite reduction freezing requirements.
- It is advisable to maintain a list of food suppliers in case they need to be contacted. An example worksheet for listing suppliers is provided in Appendix B.
- For all foods, the label or receipt must contain details of suppliers' names and addresses. Phone contact details should also be kept.
- Only receive foods that are within their use by date or best before date.
- Items that do not meet receipt requirements should be returned to the supplier.
- Retain seafood tags for a minimum of 90 days.

B. Ready-made sushi

- Only receive sushi that has been transported in refrigerated vehicles.
- Always check the temperature of sushi for each batch received. The temperature must be 5°C (41°F) or less.
- Once received, sushi must be kept refrigerated at 5°C (41°F) or less.
- Sushi must be covered during receipt and storage to protect against contamination.

C. Potentially hazardous raw ingredients

Potentially hazardous foods and raw materials will need to be stored refrigerated. This would include meat, chicken, seafood, non-acidified cooked rice and dairy products.

- Only receive potentially hazardous foods that have been transported under temperature control.
- Once received, all potentially hazardous foods must immediately be placed under refrigerated storage at 5°C (41°F) or less.
- Only sushi-grade tuna or fish should be used in raw fish sushi.
- Refrigerated raw ingredients must be stored separately from finished sushi and ready-to-eat foods and ingredients such as tuna or salmon.
- Raw foods such as uncooked chicken and meat must not be placed above ready-to-eat foods in the refrigerator, to prevent the raw juices from dripping onto them.
- Refrigerated ingredients must be covered during receipt and storage to protect against contamination.

D. Shelf-stable foods

- Shelf-stable foods include uncooked rice, seaweed (nori) sheets, wasabi powder and pickles.
- When receiving shelf stable foods make sure that the packaging is intact.
- Shelf-stable foods must be covered during storage to protect against contamination.

E. Frozen foods

- All frozen foods must be received in a frozen state.
- If foods are to be kept frozen, they must be placed in a freezer immediately.
- When receiving and storing frozen foods, ensure they are adequately covered and the package is intact.

Parasite Destruction for Raw Fish

- Seafood products to be served raw must:
 - Have been frozen at a temperature of -20°C (-4°F) for 7 days or
 - below -35°C (-31°F) for 15 hours, to destroy parasites that might be present unless:
 - ✓ The fish was aquaculture-raised and fed formulated feed that contained no live parasites infective to the fish, OR
 - ✓ The product is confirmed as tuna of the species Yellowfin, Bluefin, Bigeye, Albacore, or Blackfin

Preparing Sushi

Preparing sushi involves a great deal of handling of both raw and cooked foods. Because sushi is eaten without any further cooking it is important that it is prepared correctly and safely.

A. Equipment and utensils

- With the exception of bamboo mats, wooden utensils must not be used for food preparation. All utensils must be able to be easily cleaned.
- Only clean and sanitized equipment must be used when preparing sushi.
- It is recommended that prior to preparation all benches and utensils which come in contact with the sushi and ingredients are sanitized.
- Sushi rolling machines must be periodically cleaned and sanitized during the day to remove the build-up of rice and destroy pathogenic bacteria. Other utensils and equipment will also need to be periodically cleaned to remove build-up of rice and other ingredients.
- Boards and utensils must be cleaned and sanitized between uses, especially when preparing foods that will not be further cooked (eg. raw fish and cooked teriyaki chicken).
- Bamboo and plastic mats must be cleaned and sanitized daily. If bamboo mats are used then it is recommended that they be covered with clean cling wrap and the cling wrap changed at least every 2 hours.

B. Preparation of acidified rice

- Rice must be cooked before acidification. The rice must be cooled rapidly to 5°C (41°F) from the time it has been taken out of the rice cooker and logged for review.
- Proper preparation of acidified rice is important to ensure the rice is safe to use. Rice acidified to a pH of less than 4.6 will inhibit the growth of pathogenic bacteria. Acidification of rice should occur as soon as possible after cooking.
- The pH of the rice is to be checked to ensure proper acidification has occurred. Refer to Appendix A for pH measuring devices. Once acidified, the rice must be stored covered when not being used.
- Acidified rice can be stored up to 8 hours and at the end of the day, the remaining rice must be discarded.

Note: If cooked rice is not acidified, it must be stored under refrigeration at or below 5°C (41°F) at all times.

C. Preparation of fillings and sushi

- All potentially hazardous raw materials should be kept under refrigeration until used, especially for raw fish.

- Frozen foods are to be thawed under refrigeration, in a microwave oven, or under cold running water.
- Vegetables must be washed under running potable water before use.
- Meat and chicken must be thoroughly cooked. Refer to Health Canada for safe internal food temperatures. <http://www.hc-sc.gc.ca/index-eng.php>
- Prepared potentially hazardous ingredients (e.g. cooked chicken, tamago) must be placed under refrigeration after cooked and when not being used.
- Once prepared, sushi should be placed under refrigeration (at 5°C/41°F or less).

Note: Display cabinets will not effectively reduce the temperature of prepared sushi.

- Businesses with limited storage and display space should only make an amount of sushi that can be properly placed within the storage or display section. Sushi must not be left unrefrigerated.

Retail display of sushi

- During display, sushi must be kept out of direct sunlight and kept under refrigeration (at 5°C/41°F or less).

A. Sushi Bars

- Display cabinets must include doors to protect food from the likelihood of contamination.
- When not in use, doors on the display cabinet must be closed.
- Either each roll or batch must be able to be identified.
- Display cabinets must be cleaned and sanitized at the end of the day.
- All equipment (eg. containers or utensils) used for handling sushi must be kept clean at all times and sanitized at the end of the day.

B. Sushi conveyor system

- All plates on conveyer must be covered to protect from contamination.
- All plates must be able to be traced to a batch.
- After they have been used, all plates and lids must be cleaned and sanitized.
- Individually packaged wasabi and pickled ginger should be provided to prevent cross-contamination

Appendix A: Measuring pH:

The pH can be measured using:

- ✓ pH meter
- ✓ pH strips, or
- ✓ pH paper



Ensure that the pH test is conducted on the acidified rice once the vinegar mixture has been evenly distributed to assure a target pH of 4.6. If using a probe pH meter, ensure proper calibration by following manufacturer's instructions.

To attain a pH reading, prepare rice slurry by combining $\frac{1}{4}$ cup sample the acidified rice taken from various locations from the batch and adding $\frac{3}{4}$ cup distilled water in a clear plastic cup. Ensure uniformity by blending the slurry for approximately 20 seconds. Insert the pH paper, strips, or probe into the liquid portion of the slurry. Record the measurement. In the event the target pH is above 4.6, add more vinegar and adjust the recipe accordingly.

Appendix B: Record Keeping

***It is imperative to retain seafood tags for a minimum of 90 days.**

Supplier List

Food	Supplier Name	Supplier Address	Contact Person	Contact Number

References

Alberta Health Services. (2004) Guidelines for the Preparation of Sushi Products.
www.albertahealthservices.ca (accessed 28-Nov-2013).

NSW Food Authority. (2007) Food Safety Guidelines for the Preparation and Display of Sushi.
www.foodauthority.nsw.gov.au (accessed 28-Nov-2013).

United States Food and Drug Administration. Food Code. (2009) <http://www.fda.gov/>
(accessed 28-Nov-2013).